REMARKS

Applicant has amended Claims 1, 2, 4, 8, 13, 17, 22, and 26 in order to make minor clarifications and to correct claim dependency.

Applicant submits that no new matter is presented by these amendments and respectfully requests entry of the same.

Claim Rejections under 35 U.S.C. § 112 should be Withdrawn

Claims 1-2, 4-11, 13-20 and 22-27 are rejected under 35 U.S.C. §112, first paragraph as allegedly containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention. Applicant respectfully disagrees with the Office Action.

The Office Action alleges that the Claims provide no indication that the probes are related to the target sequence in any way. Applicant respectfully disagrees with the Examiner. It is well-known to one of skill in the art that the probes are designed based on the target sequences, since their entire purpose is to detect the presence of such sequences.

The Office Action further alleges that the Claims should include the quality predictor, bias score predictor, and cross-hybridization predictor mentioned in the Specification on pages 22-24 and 26-28, and that in their absence one skilled in the art could not construct the invention without undue experimentation. Applicants respectfully disagree. The rejected claims are directed at choosing the best set of probes in the presence of probe overlap. In some embodiments, the mathematical technique of dynamic programming is employed to select an optimal subset of probes from the pool of

candidate probes, given an associated set of quality scores and probe overlaps. The particular components chosen to be factored into the calculation of the final quality score—such as the quality predictor, bias score predictor, and cross-hybridization predictor—are not essential aspects of the invention; rather, they merely constitute one method of calculating the quality score. Their use, and the use of other equivalent score calculation measures, would be apparent to one of skill in the art.

The Office Action also alleges that the Specification does not set forth a method of obtaining an *"actual"* quality score. Applicants respectfully disagree. Again, the rejected claims are directed at the use of optimization (such as dynamic programming) to select an optimal subset of probes from the pool of overlapping candidate probes. Although the quality score can be actual (e.g. measured based on hybridization) or predicted (e.g. using linear regression and slope measurements), the way in which such score is calculated is a matter of choice apparent to one of skill in the art and irrelevant to the instant invention. The Specification discusses the method of calculating a predicted quality score using linear regression merely in order to provide one illustrative example of arriving at a quality score; such a method is by no means a necessary one for the overall process of optimal probe selection.

The Office Action further alleges that the Claims "lack steps which set forth how the actual or predicted quality scores are used to obtain the maximum aggregate adjusted quality score." Applicants respectfully disagree that it is necessary to set forth in the Claims the various possible methods of adjusting the quality scores. The method of claims 2, 11, and 20 ($S' = S\sqrt{\frac{(l-o)}{l}}$) is set forth as an example of one practical way of effecting the adjustment: namely, reducing the probe score based upon the amount of

overlap of that probe with other probes. Although there exist a great number of variations on this method (such as removing the square root and reducing linearly), they are all well within the comprehension of one of skill in the art.

The Office Action also alleges that the method of obtaining the maximum aggregate adjusted quality score from the set of individual adjusted quality scores via dynamic programming is not set forth in sufficient detail to enable actual implementation by one of skill in the art. Applicants respectfully disagree. Dynamic programming is a mathematical optimization technique, the requirements and usage of which are well known to those of skill in the art (See, for example, Dynamic Programming and Optimal Control (2nd Edition) by Dimitri Bertsekas (Athena Scientific 2001).)

The five steps at pages 30 and 31 of the Specification cited by the Office Action are not in fact requirements of an implementation for accomplishing dynamic programming; rather, they are merely exemplary steps relating to quality score adjustment that are more practically embodied in Claims 2, 11, and 20. Again, the particular method chosen for score adjustment is not a fundamental element of the invention's application of dynamic programming; rather, quality scores can easily be calculated in a variety of ways and are merely one of the inputs to the invention's dynamic programming component. Indeed, page 30 of the Specification notes that the particular method of calculating the adjusted quality score set forth in steps 1 and 2 at page 30 is merely one preferred method of accomplishing the adjustment.

For the reasons above, Applicant respectfully submits that the Specification provides detailed teachings about the application of the dynamic programming optimization process to the problem of optimal probe selection. The claims are enabled

to their full scope. Therefore, the rejection of Claims 1-2, 4-11, 13-20 and 22-27 under 35 U.S.C. §112 should be withdrawn.

CONCLUSION

For these reasons, the Applicant believes that the application is in condition for allowance and should be passed to issue.

If the Examiner has any questions pertaining to this application or feels that a telephone conference would in any way expedite the prosecution of the application, the Examiner is requested to contact the undersigned at (408) 731-5000.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account 01-0431.

Respectfully submitted,

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